

WHAT IS CLAIMED IS:

1. A mixture fitting for use in a combustible gas system, the mixture fitting comprising:
a first portion configured to be coupled to a combustible gas source;
a second portion configured to be coupled to a burner assembly, wherein the first and second portions define a gas passage; and
an air orifice defined by the mixture fitting extending from an exposed surface of the mixture fitting to the gas passage and configured to allow primary air to travel through the air orifice and into the gas passage.
2. The mixture fitting of claim 1, wherein the air orifice is positioned at an angle in a direction of a flow of combustible gas through the gas passage.
3. An apparatus for mixing air with combustible gas, the apparatus comprising:
a combustible gas source; and
a mixture fitting defining a gas passage and an air orifice extending from an exposed surface of the mixture fitting to the gas passage, wherein the combustible gas source is coupled to the mixture fitting to deliver combustible gas to the gas passage, and wherein the air orifice is configured to provide primary air to the gas passage for mixture with the combustible gas.
4. The apparatus of claim 3, wherein the mixture fitting comprises (a first portion) and (a second portion), wherein the (first portion) defines a first diameter of the gas passage and (the second portion) defines a second diameter of the gas passage that is greater than the first diameter.
5. The apparatus of claim 3, wherein (the mixture fitting) comprises a first portion and a second portion, wherein the first portion defines (the air orifice).

2020-05-27 10:07:24

6. The apparatus of claim 3, wherein the mixture fitting defines two or more air orifices. ⁸¹⁰ ^{881, 880}
7. The apparatus of claim 3, wherein the air orifice is oriented at an angle in a direction of a flow of the combustible gas in the gas passage. ^{81, 880} ⁸⁷¹ ^{Fig. 10}
8. The apparatus of claim 3, further comprising (a burner assembly ³⁰⁰) coupled to the mixture fitting ⁸¹⁰, the burner assembly comprising:
a burner ²⁰¹, wherein the burner defines a burner tube aperture ³⁰¹ ⁷¹⁰;
a burner tube coupled to the burner tube aperture ⁷¹⁰; and
an air shutter ⁷⁰¹ coupled to the burner tube ⁷⁰⁷, wherein the mixture fitting ⁸¹⁰ is coupled to the air shutter ⁷⁰¹ to deliver the combustible gas and air mixture ⁷⁰⁷ through the burner tube ³⁰¹ to the burner.
9. The apparatus of claim 8, wherein the air shutter ⁷⁰¹ defines a mixture fitting aperture ^{at 710} and wherein a portion of the mixture fitting is inserted into the mixture fitting aperture. ^{not in Fig. 3} ^{not in}
10. The apparatus of claim 3, further comprising an air shutter ⁷⁰¹, wherein the air shutter defines a mixture fitting aperture ^{not in Fig. 3} to receive the combustible gas and air mixture from the mixture fitting ⁸¹⁰ and (an air intake aperture ^{at 747}) to provide secondary air to the combustible gas and air mixture.
11. The apparatus of claim 10, further comprising a burner tube ⁷⁰⁷ coupled to the air shutter ⁷⁰¹ to deliver the combustible gas and air mixture to a burner ³⁰⁰.
12. A gas fireplace ¹⁰⁰ comprising:
a combustion chamber enclosure defining a combustion chamber ²⁰¹ ¹³⁰;
a burner assembly ³⁰⁰ disposed within the fireplace ¹⁰⁰, wherein the burner assembly includes:

300
a burner disposed to combust a combustible gas and air mixture within
the combustion chamber, wherein the burner defines a burner tube aperture,
707
a burner tube coupled to the burner tube aperture, and
701
an air shutter coupled to the burner tube; and
810
a mixture fitting defining a gas passage and an air orifice, wherein combustible
871
gas is delivered through the gas passage and mixed with primary air entering the gas
880, 881
passage through the air orifice to form the combustible gas and air mixture and wherein
the mixture fitting is configured to deliver the combustible gas and air mixture to the
300
burner through the burner tube.

13. The fireplace of claim 12, wherein the air shutter defines a mixture fitting
aperture and wherein a portion of the mixture fitting is inserted into the mixture fitting
aperture.

14. The fireplace of claim 12, wherein the air shutter defines an air aperture,
wherein the air aperture is configured to deliver secondary air to the combustible gas
and air mixture.

15. The fireplace of claim 12, wherein the air orifice is oriented at an angle in a
direction of a flow of the combustible gas within the gas passage.

16. A method for the mixing of combustible gas and air, the method comprising the
steps of:

providing a combustible gas source; and

providing a mixture fitting that defines a gas passage and an air orifice oriented

at an angle in a direction of a normal flow of the combustible gas, wherein the

combustible gas source delivers combustible gas to the gas passage and wherein the air
orifice provides primary air to the gas passage for mixture with the combustible gas.

17. The method of claim 16, further comprising a step of providing an air shutter to receive the combustible gas and air mixture. ⁷⁰¹

18. A method for generating a combustible gas and air mixture in a gas fireplace, the method comprising the steps of: ¹⁰⁰

supplying combustible gas from a combustible gas source; ⁸¹⁰

conducting the combustible gas from the combustible gas source to a mixture fitting, wherein the mixture fitting defines a gas passage and an air orifice; ^{810 871 880 881}

passing the combustible gas through the gas passage; ⁸⁷¹

providing primary air into the gas passage through the air orifice; ^{880 881 871}

mixing the air with the combustible gas within the gas passage to form the combustible gas and air mixture; and ⁸¹⁰

directing the combustible gas and air mixture from the mixture fitting.

19. The method of claim 18, further comprising a step of conducting the expelled combustible gas and air mixture to a burner for combustion. ³⁰⁰

20. The method of claim 18, wherein the step of directing the combustible gas and air mixture to a burner for combustion comprises adding secondary air to the combustible gas and air mixture. ³⁰⁰ ^{@ 440}